Remarks

Claims 1-8 are pending.

Claims 1-8 stand rejected.

Claims 1-8 have been amended.

Claims 1-8 are submitted herein for review.

No new matter has been added.

In paragraph 1 of the Office Action, the Examiner has objected to Figure 1, because a misspelling of the term "TAP." Applicant has amended Figure 1 to include the correct spelling and respectfully requests that this objection be withdrawn.

In paragraph 3 of the Office Action, the Examiner has objected to claims 1-8 because the claims contain minor informalities. Applicant has amended the claims according to the Examiner's suggestion and respectfully requests that these objections be withdrawn.

In paragraph 5 of the Office Action, the Examiner has rejected claims 1-8 under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art figure 1 in view of Maheshwari (U.S. Patent No. 5,424,614). In the Office Action the Examiner asserts that the admitted prior art illustrates all of the elements of the present invention except for a capacitor with capacitance at both ends of a lamp being equal. The Examiner contends that Maheshwari teaches capacitors at either end of the lamp in Fig. 3 and the capacitances being equal is only of routine skill in the art.

Combining the references, the Examiner concludes that independent claim 1 is obvious.

Applicant respectfully disagrees with the Examiner's contentions and submits the following remarks in response.

The present invention as claimed in claim 1 is directed to a ballast circuit for supplying AC voltage and current to at least one gas discharge lamp mounted in a troffer upon an application of DC voltage and current, where the troffer has a ground connection. The circuit maintains a transformer including a first and second primary winding. First and second transistors are provided, each having base, collector and emitter terminals. The base terminal of each of the transistors is coupled to a drive terminal of the second primary winding.

A constant current flow network is coupled to the drive terminal so as to maintain the circuit in an oscillating mode. The first primary winding is configured to be coupled across the at least one lamp such that a capacitance at a first end of the at least one lamp relative to the transformer is equal to a capacitance at a second end of the at least one lamp relative to the transformer, so as to reduce the common mode conducted noise. The current supply source is coupled to the troffer ground connection.

This arrangement provides an advantage over the prior art filtering arrangements, such as those shown in the admitted prior art Fig. 1 for reducing electromagnetic interference. See specification pages 3 and 4. For example, as noted in the second paragraph on page 16 of the specification, because each lamp has a capacitor disposed at each end having equal capacitance values, transformer 101 is symmetrical. When one end of the lamp experiences a positive voltage, an equal, but opposite, negative voltage is experienced at the other end of the lamp.

In this configuration, with the capacitors of equal capacitance located at either end of the lamp, the parasitic current induced into the troffer 183 due to a voltage experienced at one end of

the lamp is effectively cancelled due to the equal, but opposite voltage experienced at the other end of the lamp. By reducing the current induced into the lamp to substantially zero, the common mode conducted noise is effectively reduced, eliminating the need for the filtering circuit, such as that shown in Fig. 1 (including elements 191 -193 and 153-154). See pages 16 and 17 of the specification.

The cited prior art, namely the admitted prior art Fig. 1, shows a prior art ballast circuit which makes use of a standard filtering circuit including capacitors 191- 193 and high inductance common mode inductors 153 and 154.

The cited prior art, namely Maheshwari teaches a modified half bridge parallel loaded series resonant converter topology for an electronic ballast. In Maheshwari, the half bridge circuit is intended to address difficulties in electronic ballast applications where the circuit starts up without a load current. See column 1, lines 35-38. Maheshwari teaches an arrangement with half-bridge parallel loaded series resonant converter circuit topology where the DC blocking capacitors with looser tolerances can be used and where the DC blocking capacitors are effectively not part of the resonant circuit. See column 2, lines 14-24.

In Maheshwari, as shown in Figs. 5 and 6, ballast circuits incorporating the inventive features from Figs. 3 and 4 respectively, show the AC power source, which is in turn sent through to the load via MOFSETS 100 and 102 (Fig. 5) or 130 and 132 (Fig. 6). DC blocking capacitors 108 and 110 or 138 and 140 maintain the specific function of preventing DC current from flowing through the load. See column 2, lines 63-64 and column 3, lines 26-28. No mention is made for reducing common mode conducted noise.

The cited prior art references, either alone or in combination with one another, do not teach or suggest all of the elements of the present invention as claimed in independent claim 1.

First, the Examiner acknowledges that the admitted prior art Fig. 1 from the present application does not teach such an arrangement of equal capacitances on either side of lights, but rather, relies on a combination of teachings of the admitted prior art, with the Maheshwari reference to show capacitors located on either side of the load. However, such a combination is impermissible because the two reference contain no teaching or suggestion to combine themselves with one another.

The admitted prior art is shown specifically to illustrate previous attempts to reduce unwanted electromagnetic interference by way of a filtering circuit (elements 191, 192, 193, 153 and 154). There is no suggestion to add the DC blocking capacitors from Maheshwari in order to address the electromagnetic interference problem faced in the admitted prior art. Likewise, there is no teaching or suggestion in Maheshwari to add its DC blocking capacitors to a system such as that in the admitted prior art. In fact, as shown in Figs. 5 and 6 the system of Maheshwari is not an analogous ballast circuit to that shown in the admitted prior art Fig. 1 from the present invention.

Furthermore, even if the references were combined as suggested by the Examiner, the resulting structure would still not teach or suggest all of the elements of the present invention as claimed in independent claim 1. For example, there is no teaching or suggestion in either of the prior art references, either alone or in combination with one another, that disclose an arrangement where the capacitance at a first end of the at least one lamp relative to the transformer is equal to a capacitance at a second end of the at least one lamp relative to the transformer so as to reduce common mode conducted noise.

The DC blocking capacitors of Maheshwari, even if inserted into the admitted prior art ballast configuration in Fig.1, as suggested by the Examiner, would still not result in equal

capacitance on either end of the lamp so as to reduce common mode conducted noise. The resulting structure would still allow such noise into the troffer, and would thus still require a filtering arrangement to address such concerns.

The Examiner has noted that the capacitors in Maheshwari do not show equal capacitances but states that, "...the values of the capacitances can be accommodated to facilitate the control of potential power supplied to the lamp(s) and such an accommodation of the capacitances involved only routine skill in the art."

Applicant respectfully disagrees with this assertion. Although capacitance values may be altered in certain situations according to the needs of a particular system, the present invention claims a particular capacitance value to achieve a particular result. Namely, the present invention as claimed in independent claim 1 claims capacitance values equal on either side of lamp so as to reduce the common mode conducted noise. Such a feature is not of ordinary skill in the art. The setting of equal capacitance values on either side of the lamp to be equal is not simply an optimization determination to control the potential power supply but is instead a particular capacitance setting that achieves a specific result that is not taught or suggested in the prior art, let alone the routine skill in the art. If the Examiner continues this rejection on these grounds, Applicant respectfully requests that the Examiner provide a reference that shows that such a capacitance setting is of routine skill.

In view of the forgoing, Applicant respectfully requests that the rejection of independent claim 1 be withdrawn. Additionally, as claims 2-8 depend therefrom, the rejection of these claims should be withdrawn for the same reason.

Applicant respectfully submits that pending claims 1-8 are now in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that

an interview would facilitate the prosecution of this Application they are invited to contact the undersigned at the number listed below.

Respectfully submitted,

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Amendments to the Drawings

The attached sheet of drawings in the Appendix, include changes to Fig. 1.

Specifically, replacement sheet 1, which includes Fig. 1, replaces the original sheet 1.

In Fig. 1, the term TRANSFORMER CENTER TOP" has been changed to "TRANSFORMER CENTER TAP" to correct the spelling of the word tap.

Attachment: Replacement Sheets
Annotated Sheets Showing Changes